

# A Pilot Evaluation of the AfterDeployment.org Online Posttraumatic Stress Workshop for Military Service Members and Veterans

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This pilot study employed a nonconcurrent, multiple-baseline single-case design to examine the impact of an online self-management posttraumatic stress (PTS) workshop on self-reported symptoms of PTS, depression, and functional impairment. Eleven student veterans with PTS first completed between three and five weekly baseline measures. Second, they took part in eight weekly online workshop sessions, each accompanied by symptom assessments. Third, they completed postintervention outcome measures. We found statistically significant reductions in PTS from baseline across workshop sessions for four of 11 participants, and significant overall reductions in PTS between enrollment and postintervention for five participants. One participant also demonstrated significantly reduced depressive symptoms from baseline across the intervention, and two evidenced significant overall reductions from enrollment to postintervention. Three student veterans showed significantly improved general functioning across the sessions and one reported significant overall functional increase. Finally, five of six participants who completed extended measures of educational function showed significant improvements from enrollment to postintervention. Among secondary outcomes, more than 80% of those taking part said they would recommend the online PTS workshop to a colleague or fellow student with PTS issues. These preliminary findings show that our online PTS workshop can be effective in reducing PTS symptoms in some cases, but also suggest that additional research is needed. With increasing numbers of service members and veterans using the Internet and many reluctant or unable to seek in-person care because of stigma or limited access, the time seems right to further examine the utility of networked PTS resources.

**Keywords:** posttraumatic stress, military, online, veterans

Since the onset of the wars in Afghanistan and Iraq, there has been an upsurge of psychological ailments and behavioral disorders in returning service members (Seal et al., 2009), most notably, posttraumatic stress (PTS; Milliken, Auchterlonie, & Hoge, 2007; Thomas et al., 2010; Vasterling et al., 2010). Unfortunately, there persists within the military culture a reluctance to seek in-person

treatment for behavioral-health issues. There is a prevailing attitude among many service members and veterans that getting help for a behavioral or psychological problem would be perceived as a sign of personal weakness and/or that their careers could be adversely affected (Kim, Thomas, Wilk, Castro, & Hoge, 2010; Pietrzak et al., 2010; Pietrzak, Johnson, Goldstein, Malley, &

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Southwick, 2009). As many as 23% to 40% of United States (U.S.) service members with psychiatric disorders fail to request help, at least in part because of concerns about being stigmatized (Greene-Shortridge, Britt, & Castro, 2007).

Service members in need of psychological help also face practical obstacles to face-to-face care. Repeated changes of station and multiple deployments across diverse locations and time zones are commonplace in the U.S. military. Military personnel, especially National Guard and reservists returning to their civilian lives between deployments, may find themselves in locations remote from behavioral-health treatment facilities or from providers experienced in redeployment issues. Distance and travel time, difficulty scheduling appointments, and not knowing where to get help have also been reported as obstacles to care by veterans of Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF; Buzza et al., 2011; Pietrzak et al., 2009).

Online tools and resources may hold a key to addressing issues of both stigma and access. The Internet confers a degree of privacy and anonymity to a user who may have confidentiality concerns. Furthermore, websites and other networked technologies are available 24/7, can bypass difficulties with scheduling/business hours, and may obviate need for travel to sometimes distant or inconvenient specialized-care facilities.

The use of web-based self-management of health is not new. Internet-administered self-help programs have been effective in treating anxiety, depression, and PTSD (Andersson et al., 2005; Christensen, Griffiths, & Jorm, 2004; Frueh et al., 2007; Germain, Marchand, Bouchard, Guay, & Drouin, 2009; Morland, Pierce, & Wong, 2004; Reger et al., 2011). In their meta-analysis of 22 studies on computerized cognitive-behavioral treatments (CBT) for anxiety and depression, Andrews, Cuijpers, Crask, McEvoy, and Titov (2010) found an overall standardized mean difference of 0.88 (Hedges' *g*) between computerized CBT treatments and control conditions (Andrews et al., 2010). Similar effect sizes have been reported for Internet CBT interventions for PTSD (McLean, Steenkamp, Levy, & Litz, 2009; Spence et al., 2011).

### AfterDeployment.org

The Internet clearly has the potential to reach a large proportion of military personnel and veterans as a vehicle for behavioral health. Accordingly, the U.S. Defense Department's National Center for Telehealth and Technology website (T2; *National Center for Telehealth and Technology*, 2012) has developed and maintains AfterDeployment.org (AD), a web-based behavioral-health resource for the military community (Bush, Bosmajian, Fairall, McCann, & Ciulla, 2011; Ruzek et al., 2011). AD currently contains modules covering 18 deployment-related topics, most with associated online assessments and self-management workshops. The posttraumatic stress (PTS) self-management workshop module is one of the most frequently selected topics on the website (Bush et al., 2011; Ruzek et al., 2011).

The primary purpose of the current pilot study was to make a preliminary case-level evaluation of the effectiveness of the PTS workshop sessions on reported PTS symptoms, depression, and functioning. A secondary goal was to obtain feedback on the workshop sessions (e.g., most helpful tools, recommendations for improvement) and user ratings of satisfaction and acceptability.

## Method

### Design

We employed a nonconcurrent, multiple-baseline single-case design for this study (Bulté & Onghena, 2009; Ferron & Scott, 2005; Perdices & Tate, 2009; Watson & Workman, 1981). A multiple-baseline design across individuals takes repeated baseline measurements of the same behavior in different individuals for varying lengths of time, followed by an intervention phase. Because the length of the baseline is different across different individuals, any effect of the introduction of the intervention on baseline behavior can be more clearly delineated. Effects of the intervention typically are evaluated within each case along the duration of the baseline phase, intervention phase, and any follow-ups. In the current study, the number of weekly baseline assessments assigned to individuals varied from 3 to 5 prior to the beginning of the intervention (see Figure 1).

### Eligibility

All participants were student veterans attending classes at San José State University (SJSU) during the 2011 spring semester. To be eligible for the study, participants had to (a) be a veteran of OEF/OIF; (b) be available to participate in the study for a minimum of 14 weeks; (c) have regular and convenient Internet access; (d) experience unwanted/intrusive war-related memories; (e) score above threshold on a standardized measure of PTSD; and (f) not be at risk for harm to self or others. All study elements were approved by the SJSU Institutional Review Board.

### Intervention

The intent of the eight online multimedia sessions comprising the PTS self-management workshop is to normalize the experience of symptoms and help users cope with symptoms of PTS. Over the eight sessions, users learn specific techniques for managing intrusive memories, avoidance, and hyperarousal symptoms. Among numerous coping elements, users:

- Record and confront their trauma triggers. The intent is to normalize the experience of symptoms and to help users develop strategies for planning gradual exposure to a hierarchy of personal triggers. Users are provided with the rationale and strategies to allow them to stay in the presence of a trigger until arousal diminishes. The strategies include creating a list of coping strategies, and cognitive reframing to help cope with catastrophic thinking and to accept the presence of physical symptoms.
- Employ a "relax, identify, and decide" (RID) tool to develop relaxation and problem-solving skills. The RID tool introduces cognitive and behavioral strategies to manage unexpected triggers. Individuals develop a plan to use relaxation tools when triggered, for example, a deep-breathing exercise. They then identify the difference between the original trauma and current triggers. Finally, they learn that they can choose a response to a trigger as part of a planning process. Problems with the use of avoidance as a response to triggers are identified and strategies to use during exposure are described and integrated into a plan. Video modeling is included to demonstrate the points.

Study week		0	1	2	3	4	5	6	7	8	9	10	11	12	13
Assessments	P5 (n=2)	BP	B	B	B	B	S1	S2	S3	S4	S5	S6	S7	S8	PP
	P4 (n=6)	BP	B	B	B	S1	S2	S3	S4	S5	S6	S7	S8	PP	
	P3 (n=3)	BP	B	B	S1	S2	S3	S4	S5	S6	S7	S8	PP		

*Figure 1.* Workshop sessions outcomes assessment schedule. BP = baseline assessment on paper at in-person meeting; measures: demographics, PCL-M, PHQ9, B-IFI, IFI-Ed. B = online baseline assessments; measures: PCL-M, PHQ9, B-IFI, IFI-Ed. S = online workshop sessions assessments; measure: PCL-M, PHQ9, B-IFI, IFI-Ed. PP = postintervention assessment on paper at in-person exit meeting; measures: PCL-M, PHQ9, B-IFI, IFI-Ed, WEQ. P = number of weekly baseline assessments randomly assigned to individuals: P3 = 3 weeks, P4 = 4 weeks, P5 = 5 weeks.

- Complete writing exercises for cognitive reframing. Narrative exercises teach users to cope with distressing thoughts and memories by putting their story together into a coherent narrative and using that process to reduce both arousal and avoidance of distressing thoughts.

These techniques were derived by subject matter experts from T2 and the National Center for PTSD from stress-inoculation training (Meichenbaum & Deffenbacher, 1988), CBT, and acceptance-commitment therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Table 1 summarizes the components of each workshop session associated with the cognitive-behavioral techniques utilized.

## Measures

**Background questionnaire.** Demographic data collected by paper-and-pencil questionnaire included age, gender, marital status, children, education, race/ethnicity, prior military service, and current student status. The background questionnaire also required respondents to rate their experience and skill with computers and the Internet.

**PTSD Checklist (PCL-M; Weathers & Ford, 1996; Wilkins, Lang, & Norman, 2011).** The PCL-M is a well-validated self-report measure that evaluates 17 PTS symptoms using a 5-point Likert-type scale (1 = *not at all*, 2 = *a little bit*, 3 = *moderately*, 4 = *quite a bit*, 5 = *extremely*). Item scores are summed (range 17–85; Weathers, 2008), with higher scores indicating more severe symptoms. Recommended diagnostic cutoff scores depend on the population and setting. For example, a cutoff score of 50 has been recommended for treatment-seeking Vietnam veterans, while PCL scores closer to 30 have been recommended for nontreatment-seeking OEF/OIF veterans (Bliese et al., 2008; McDonald & Calhoun, 2010). Tsai, Pietrzak, Southwick, and Harpaz-Rotem (2011) have reported internal consistency values of 0.92 for the PCL-M, based on a sample of 164 OEF/OIF veterans. Internal consistency (Cronbach's alpha) at baseline for the PCL-M in the current study was 0.91.

**Patient Health Questionnaire-9 (PHQ-9; Kroenke & Spitzer, 2002).** The PHQ-9 is a widely used, brief, 9-item, patient self-report depression-assessment tool. Items are rated on 4-point scales (0 = *not at all*, 1 = *several days*, 2 = *more than half the days*, 3 = *nearly every day*) and summed for a possible score ranging from 0–27. Higher scores on the PHQ-9 indicate increas-

ing depression severity, with scores above 10 reflecting moderate or higher levels of depression (Kroenke, Spitzer, & Williams, 2001). PHQ-9 Item 9 asks about suicidal ideation and self-harm and was additionally used in the current study to monitor participant safety. In their study of 164 OEF/OIF veterans, Tsai et al. (2011) cited internal consistency as 0.89. Cronbach's alpha at baseline for the PHQ-9 in the current study was 0.81.

**Inventory of Functional Impairment–Brief Version (B-IFI; Holowka & Marx, in press; McQuaid et al., in press; Rodriguez, Holowka, & Marx, in press).** The B-IFI is a 7-item self-report instrument that assesses functional impairment across several domains (intimate relationships, extended family relationships, work, parenting, friendships and socializing, education, and self-care). For each domain, respondents rate how much difficulty they have experienced during the past 30 days. For the current study, we modified the time scale to reflect the past week. General or overall impairment is indicated by the mean B-IFI score over all items, with higher scores indicating greater functional impairment. Marx et al. have described an internal consistency of 0.81 for the B-IFI with 1,600 OEF, OIF, and Operation New Dawn veterans (OND; B. F. Marx, personal communication, May 31, 2012). Cronbach's alpha at baseline for the B-IFI in the current study was 0.83.

**Inventory of Functional Impairment–Educational Impairment (IFI-Ed; Holowka & Marx, in press; McQuaid, et al., in press; Rodriguez, et al., in press).** Because the student veterans in our sample were actively attending classes, we supplemented the general B-IFI with a more expansive, 15-item educational impairment module (labeled here as the IFI-Ed) from the full 87-item version of the Inventory of Functional Impairment. Presentation of the extended IFI-Ed to participants each week was triggered by an affirmative answer to the following question: "Have you been involved in a formal educational experience, either in or outside of the school setting, during the past week?" The developers of the IFI-Ed report an internal consistency of 0.89 with 1,600 OEF/OIF/OND veterans. Cronbach's alpha at baseline for the IFI-Ed in the current study was 0.66.

**Workshop Evaluation Questionnaire (WEQ).** The WEQ contained nine 5-point items generated specifically for this study to inform general acceptability of the workshop sessions. The measure included four items assessing satisfaction with the effectiveness of the workshop, two ease-of-use items, and items addressing convenience of the workshop sessions, confidence that

Table 1  
*AfterDeployment.org* PTS Workshop Content

Session	Session content	Techniques
Session 1: What are trauma triggers?	A. Introduction B. What are trauma triggers? C. Your trigger list D. Trigger record E. Homework F. Session review	Psychoeducation Normalization Awareness of personal triggers
Session 2: RID: Relax	A. Welcome B. RID Tool C. RID Tool R: Relax D. Homework E. Session review	Relaxation training Breathing retraining
Session 3: RID: Identify and decide	A. Introduction B. RID Tool I.D.: Identify and decide C. Practice D. Homework E. Session review	Cognitive reappraisal Problem-solving skills
Session 4: Confronting triggers	A. Introduction B. Cost of Avoiding Triggers C. Confronting Triggers D. Homework E. Session Review	Values Trigger hierarchy
Session 5: A "PLAN" for facing triggers	A. Introduction B. Planning to face triggers C. PLAN Tool: Prepare yourself D. Homework E. Session review	In-vivo exposure Acceptance
Session 6: Writing your story, Part One	A. Introduction B. Writing about deployment C. Coping with strong feelings D. Homework E. Session review	Trauma exposure (1) Cognitive-reframing Acceptance
Session 7: Writing your story, Part Two	A. Introduction B. Writing Exercise C. Homework D. Session Review	Trauma exposure (2) Narrative coherency
Session 8: Review and future planning	A. Introduction B. Review C. Unhelpful way of dealing with triggers D. Choose success E. Conclusion F. Session review	Relapse prevention

the workshop was beneficial, and recommendation of the workshop to peers.

**Exit interview.** Finally, participants provided qualitative feedback on the workshop sessions. Participants ranked the helpfulness of the eight different PTS sessions, and provided feedback on their overall experience with the workshop and recommendations for improvement. The study coordinator also made notes about the participant's level of distress and engagement during the exit interview.

## Procedures

**Recruitment and screening.** Recruitment flyers describing the study were distributed by email to all student veterans attending SJSU during the spring 2011 semester. After confirming that inquiring candidates met initial eligibility requirements, the study coordinator conducted brief in-person interviews to assess symptom severity and potential risk of harm to self or other. Any potential participants reporting extreme or acute

distress, an active substance-abuse problem, and/or risk of harm to self or other, were excluded from the study and provided with an immediate referral. Potential participants otherwise completed a paper-and-pencil PCL-M. To qualify for the study we required individuals to meet or exceed a threshold PCL-M score of 30. A PCL-M cutoff score between 30 and 34 has been identified as optimal for discriminating OEF/OIF veterans with and without PTSD (Bliese et al., 2008). Eligible candidates finally completed written informed consent and were enrolled in the study.

**Baseline, intervention, and postintervention assessments.** Following enrollment, procedures followed the sequence below, illustrated by Figure 1.

**1. Baseline assessment on paper.** At the in-person enrollment meeting after completing the screening PCL-M and informed consent, each participant next completed paper-and-pencil copies of the background questionnaire, PHQ9, B-IFI, and IF-Ed. Participants were then shown the general PTS online workshop interface



and layout, and received instructions on how to log on using an assigned unique study number as a password and how to complete the online assessments associated with the workshop.

**2. Baseline assessments online.** Each individual was then randomly assigned to one of three multiple-baseline schedules requiring three, four, or five weekly completions of the online versions of PCL-M, PHQ-9, and B-IFI. For the designated number of weeks, participants logged on and completed their assigned online baseline self-assessments.

**3. Online workshop-session assessments.** Baseline self-assessments were followed by eight weekly online, PTS workshop-intervention sessions. Each online workshop-session participant logged on to the secure study website and first completed the PCL-M, PHQ-9, and B-IFI self-assessments (measuring change in those outcomes over the previous week since the last workshop session). The participant was then directed by the system to the next designated PTS 30-min workshop session. A last online outcome assessment was completed one week after the eighth and final workshop session.

**4. Postintervention assessment on paper.** Last, one week after the 8th-session assessment, participants returned to the study location. At this time PCL-M, PHQ-9, B-IFI, and IFI-Ed measures, and the WEQ were completed on paper, and the semistructured exit interview was conducted. Participants were given reimbursement for their participation, thanked, and dismissed.

### Compliance, Monitoring, and Data Collection

Completion of the assignments for each activity, as well as changes in symptoms and functioning, were tracked electronically and stored without personal identifying information on the study's secure server. The research coordinator (RC) additionally monitored the system database daily for safety (e.g., any positive score on PHQ-9 Item 9, "Thoughts that you would be better off dead or of hurting yourself in some way," or other indications of self-harm/harm to others) and for compliance.

### Statistical Analysis

We conducted our primary statistical analysis using AB single-case design methods described by Huitema (Huitema, 2011; pp. 370–394), in which "A" denotes baseline measurement and "B" refers to assessment of a subsequent intervention. We fitted regression models to the data for each participant. These models included the baseline level, level change, and the slope for the intervention phase.

The baseline level was the mean of the baseline phase. In case of a nonsignificant slope for the intervention phase, the level change was simply an estimate of the mean difference between the two phases. When a significant trend was present in the intervention phase, the level change referred to the predicted value of the level of the dependent variable at the first time point of the intervention, based on the baseline and intervention data (Huitema, 2011, p. 370; Huitema & McKean, 2000; Huitema, McKean, & Laraway, 2008). Negative values for level change indicated that participants experienced decreases in symptoms from the baseline phase. The slope term for the intervention phase described the change in the dependent variable over time in that phase. A negative slope showed that the participant experienced a decrease

in the severity of symptoms over the course of the intervention phase.

In cases in which the slope for the intervention phase was not statistically significant, the intervention-slope parameter was dropped from the model, leaving a two-parameter model that included the intercept and the level change (i.e., the mean difference between the two phases).

Because participants were only available for the study within the confines of the college semester, we had shorter than optimal baselines for an accurate and stable estimate of the baseline slopes (fewer than 6 data points; Huitema, 2011; p. 390–391). Furthermore, although visual inspection of the baseline slopes suggested trends for some participants, for 10 of the 11 participants, these slopes were not significantly different, statistically, from zero. Consequently, we chose not to estimate the slope for the baseline phase and instead assumed it to be zero for statistical analysis. We conducted residual analyses to assess the aptness of each model and we included an evaluation of normality, homogeneity of variance across phases, and Lag-1 autocorrelation for the errors. When violations of these assumptions were detected, corrections were applied (e.g., McKnight, McKean, & Huitema, 2000). To estimate the size of the treatment effect from the baseline to intervention phases, we computed the standardized level-change measure, which expressed the level change in standard deviation units (Huitema, 2011, p. 387). For all analyses, alpha was set to .05.

As an adjunct measure of statistical significance, we calculated the Reliable Change Index (RCI; Jacobson, Follette, & Revenstorf, 1984) between outcomes at enrollment and postintervention/exit for each individual. The RCI determines whether a change in an individual's score before and after an intervention is statistically significant, based, in part, on the reliability of the measure. For the current study, we adopted the widely used RCI equation cited by Jacobson and Truax (Jacobson & Truax, 1991),  $RCI = \frac{X_2 - X_1}{S_{diff}}$ , which utilizes the stan-

dard error of difference ( $S_{diff}$ ) between pretest ( $X_1$ ) and posttest ( $X_2$ ) scores. Calculation of  $S_{diff}$  incorporates a measure of reliability (internal consistency) of the instrument, most commonly a Cronbach's alpha, ideally obtained from an external source (Maassen, 2004). For the current study, we applied the following comparative alphas from the literature to our RCI equation: PCL-M  $\alpha = .92$  and PHQ-9  $\alpha = .89$ ; (Tsai et al., 2011, sample  $N = 164$  OEF/OIF/OND veterans); B-IFI  $\alpha = .81$  and IFI-Ed  $\alpha = .89$  (B. F. Marx, personal communication, May 31, 2012, sample  $N = 1,600$  OEF/OIF/OND veterans).

## Results

### Sample

Of 256 veterans attending classes at SJSU during the spring 2011 semester, 28 contacted study personnel after seeing emailed fliers. Three potential participants were disqualified because they were not OEF/OIF veterans, and two were excluded because they were preparing for imminent deployment and could not be available for the entire study. One did not have regular access to the Internet and could not participate. Ten participants reported no

significant distress associated with intrusive memories and did not qualify for the study. One individual scored less than 30 on the PCL-M and did not meet our criterion for PTS. No participant either reported being at risk of harm to self or other, nor was evaluated as such by the study coordinator. All potential participants were provided with information about campus counseling services if needed.

The remaining 11 candidates met eligibility criteria, and consented to participate. Qualifying PCL-M scores ( $\geq 30$ ) varied considerably ( $M = 48.8$ ,  $SD = 12.5$ , range = 30–68). The majority ( $n = 8$ ) described themselves as White (Asian Pacific,  $n = 2$ ; Hispanic,  $n = 1$ ). Five were single, four married and two divorced, and four of the 11 had children. Highest educational level attained was fairly evenly distributed from GED-HS ( $n = 1$ ), some college ( $n = 2$ ), associate degree ( $n = 4$ ), bachelor's degree ( $n = 2$ ), to masters level ( $n = 2$ ). Mean age of the sample was 32.3 years ( $SD = 7$ ). The 10 retired veterans and one veteran/reservist represented all four services (Army,  $n = 6$ ; Navy,  $n = 2$ ; Marine Corp,  $n = 2$ ; and Air Force,  $n = 1$ ), and both enlisted personnel (E1–E4,  $n = 4$ ; E5–E9,  $n = 5$ ) and officers (O1–O5,  $n = 2$ ). All 11 participants had served in OIF, five with multiple deployments and one additionally deployed to OEF. Reported prior experience and skills with personal technology was uniformly high. Over all 11 participants, self-rated computer skills, Internet or web skills, and Internet or web experience, respectively, were each 3.73 ( $SD = 0.467$ ; 1 = *novice*, 2 = *advanced beginner*, 3 = *competent*, 4 = *proficient*).

## Compliance and Attrition

All participants completed baseline, intervention, and postintervention follow-ups. No participant reported a positive score ( $\geq 0$ ) for suicidal ideation or self-harm on the PHQ-9, which was monitored daily during the study, and no participant was removed from the study for safety, noncompliance, change of eligibility, or other reasons.

## Symptom Outcomes

**PCL-M.** Figure 2 shows repeated self-assessed PTS (PCL-M) symptom scores over time for each participant. In each case, the vertical dotted line on the graph delineates multiple-baseline outcomes (to the left of the line) from workshop intervention and postintervention outcomes (to the right). Not all participants completed all sessions in each phase; the  $x$  axes for each participant in Figure 2 reflect the number of sessions that each participant actually completed.

Figure 2 reveals a substantial variety of trajectories and considerable fluctuations in week-to-week outcomes through multiple baselines and intervention (workshop) sessions. In some examples (e.g., P3, P5, P9 and P10), best fit lines indicated stable or even increasing multiple PCL baseline scores before the start of the workshop sessions, followed by decreasing, self-reported PTS symptoms through the sessions and postintervention meeting. In others (e.g., P1 and P2), PCL scores similarly decreased across the intervention but also decreased over the prior multiple baselines. And in yet other cases (P4, P7, P8, and P11), baselines appeared to

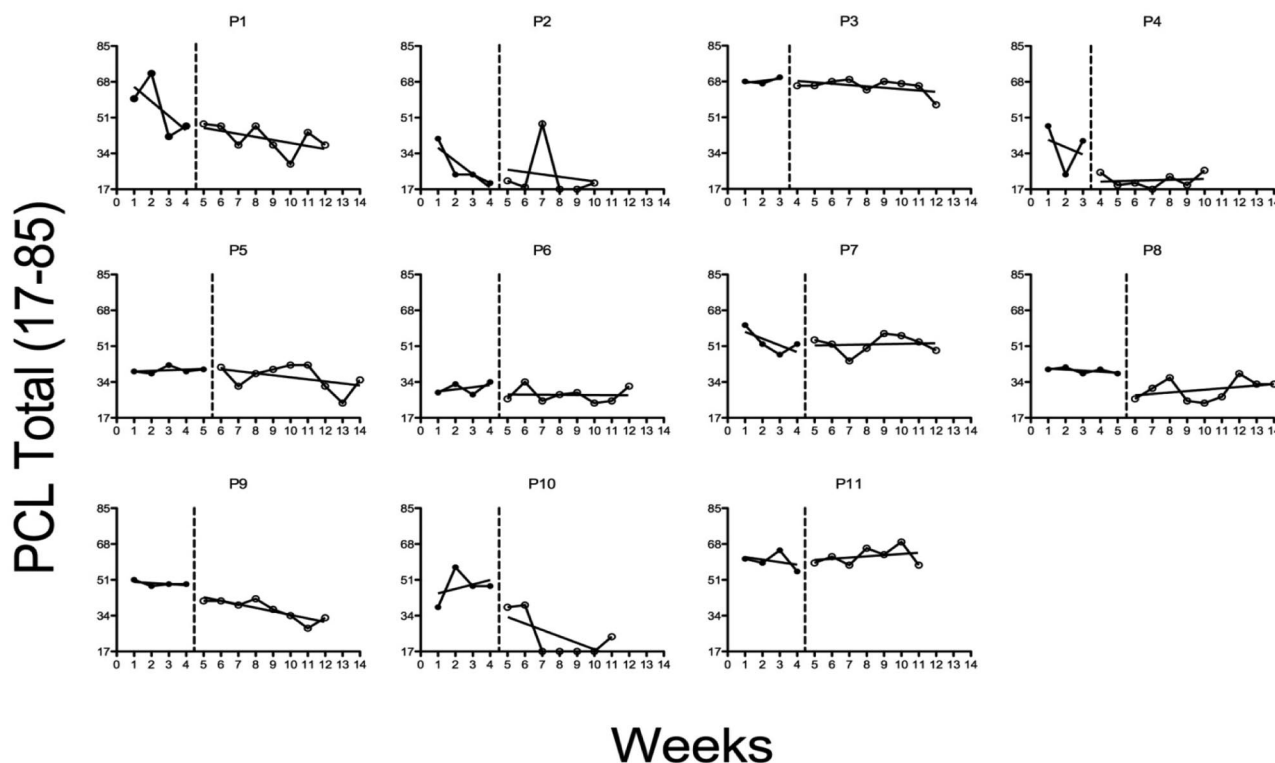


Figure 2. Repeated self-assessed PTS (PCL-M) symptom scores over time for each participant.

be stable or decreasing but intervention-PTS symptoms did not decline or even appeared to increase.

Table 2 shows individual PCL-M mean scores with associated levels of change, enrollment and exit scores, and RCIs. Ten participants (91%) showed a decrease in online PCL scores over the course of the intervention phase. For four participants (Participants 04, 08, 09, and 10), those decreases in PCL scores were statistically significant ( $p < .05$  to  $p < .01$ ), with a mean standardized level change of  $-2.45$  *SD*. PCL scores for two participants (04 and 10) fell from above to below our threshold score for PTS symptoms, 30, during the intervention phase. One participant (09) also had a significant negative slope during the intervention phase ( $p < .05$ , not shown), indicating that PTS symptoms decreased across that phase for that participant. From the initial, in-person, paper self-assessment at enrollment to the corresponding, in-person, paper self-assessment at exit, 91% of the sample ( $n = 10$ ) reported decreased PCL scores. Five participants (Participants 01, 02, 04, 09, and 10) evidenced statistically significant RCIs.

**PHQ-9.** Six participants showed decreases in self-reported depression (PHQ-9 scores) from over the course of the intervention phase. Two of these participants (04 and 06) showed significant level changes ( $p < .05$ ), with an average-standardized level change of  $-1.80$  *SD*. Over the course of the intervention phase, one participant (01) reported an overall decrease in depressive symptoms from moderate to minimal, two participants (05 and 09) showed decreases in depression from moderate to mild, and one (10), from mild to minimal depressive symptoms, as defined by Kroenke et al. (Kroenke et al., 2001). Four participants had positive level changes (36%), which was significant for one participant (05,  $p < .05$ ). However, this participant also had a significant negative slope ( $p < .05$ ), indicating that the PHQ-9 scores nonetheless decreased across the course of the intervention phase. Two other users (Participants 09 and 10) also had significant negative slopes during the intervention phase ( $p < .01$  and  $p < .05$ , respectively). From initial to postintervention, in-person, paper self-assessments, 72% of the sample ( $n = 8$ ), reported decreased depression scores. Of those, two participants (Participant 01,  $RCI = 2.76$ ,  $p < .01$ ) and Participant 09,  $RCI = 2.30$ ,  $p < .05$ ) showed statistically significant RCIs.

**B-IFI.** Seven participants (64%) reported improved overall functioning over the course of the intervention phase. For three of

those participants (04, 06, and 09), the decreases were statistically significant ( $p < .05$  to  $p < .01$ ), with a mean standardized level change of  $-2.08$  *SD*. One additional participant (10) had a significant negative slope in the intervention phase ( $p < .05$ ), indicating that scores decreased across this phase. Four other participants showed increases in B-IFI scores, and those increases were significant ( $p < .05$ ) for three of those participants (03, 07, and 11). However, one of those participants (03) also had a negative slope for the intervention phase, indicating improvement in functioning across this phase. Between enrollment and exit, nine participants showed decreased functional impairment. Just one participant (08) evidenced significant improvement in functioning ( $RCI = 2.53$ ,  $p < .05$ ) whereas another (07) actually reported a significant increase in impairment ( $RCI = -2.37$ ,  $p < .05$ ) from beginning to end of the study.

**IFI-Ed.** Finally, results from our extended measure of educational impairment revealed that eight (73%) of the student veterans attending classes at SJSU reported improved educational functioning, as indicated by decreases in IFI-Ed scores, over the course of the intervention phase. For two of these participants (06 and 09), the improvements were statistically significant ( $p < .01$  and  $p < .05$ , respectively), with a mean standardized level change of  $-1.92$  *SDs*. Two other participants showed increases in IFI Ed scores (increased functional impairment), and the increase for one of these participants (07) was statistically significant ( $p < .01$ ). Only six of the 11 participants completed IFI-Ed scores at study exit. Five of those six (01, 05, 06, 10, and 11) showed improvements in educational functioning, and all five of those improvements were statistically significant ( $RCIs = 2.15$  to  $6.49$ ,  $p < .05$  to  $p < .001$ ).

## Process Outcomes

**Workshop-evaluation questions.** Median ratings overall were generally positive across the eight debriefing questions around the level of "Quite Satisfied/Easy/Convenient" (*SD* range = 0.8 – 1.55). In addition, 81% of the participants (nine of 11) said they would recommend the PTS workshop to a colleague/student with PTS issues; the remaining two did not know.

**Exit interview.** Table 3 summarizes qualitative feedback obtained from each participant during our in-person exit interview.

Table 2  
PCL-M Scores

Participant	Mean baseline–intervention slope				Reliable change index		
	Baseline mean	Level change	Intervention level	Standardized level change	Score at enrollment	Score at exit	Pre–post RCI
1	55.25	–14.13	41.12	–1.53	60	38	4.48***
2	27.35	–3.75	23.50	–0.34	41	20	4.28***
3	68.33	–2.11	66.22	–1.03	68	62	1.22
4	34.54	–12.19**	22.35	–2.55	47	26	4.28***
5	39.40	–3.18	36.22	–0.64	39	35	0.81
6	31.00	–3.13	27.87	–0.91	30	32	–0.61
7	53.00	–1.13	51.87	–0.24	61	49	2.44*
8	39.40	–9.07**	30.33	–2.16	40	33	1.43
9	48.75	–5.83*	42.92	–2.58	49	32	3.46***
10	47.75	–23.61*	24.14	–2.51	38	24	2.85**
11	60.75	1.39	62.14	0.32	64	58	1.22

Note. In cases in which the slope was not significant, it was dropped from the final model; therefore, no value is given.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The two techniques most frequently identified from the exit interview as helping with PTS were the RID tool, cited by six of the 11 participants, and the narrative writing exercise, highlighted by four individuals. The remaining participant chose “confronting triggers” as the most helpful workshop component. Nearly half the participants recommended completion of the exercises with other veterans, or other vet/peer involvement. Other suggestions for workshop improvement variously pointed to increasing the number of videos and stories and their believability, improvement in data retrieval and access, and shortening the sessions. Notes from the study coordinator revealed variability in level of distress and engagement with the workshops.

### Discussion

The primary purpose of this case-series pilot study was to evaluate the effectiveness of the AfterDeployment.org online PTS workshop in reducing self-reported symptoms of PTS. Our initial inspection of individual PCL self-reports over time (see Figure 2) revealed a broad range of outcomes. For some participants, the PTS Workshop appeared to have no positive effect on self-reported PCL scores. Furthermore, for individuals who apparently showed improving PTS symptoms during the intervention but also during prior baseline we cannot confidently attribute an effect of the intervention to decreasing PTS symptoms. But for four participants with ostensibly stable or increasing multiple baseline scores followed by decreasing self-reported intervention PCL scores, the AfterDeployment.org workshop intervention appeared to have a clearly delineated effect on improving PTS symptoms over the eight weekly intervention sessions and postintervention assessment.

Both the AB single-case statistical analysis and reliable-change indices confirmed that nearly 40% of participants did demonstrate significant reductions in self-assessed PTS symptoms from baseline through the eight-session workshop intervention, with more than 40% showing significant change from the beginning to the end of the study. Reductions in depression and improvements in functioning also were reported by most participants, although numbers achieving statistically significant change were generally lower than for PTS symptoms. Such differential findings likely highlight the focus of the AfterDeployment.org PTS workshop on techniques that directly target the cardinal features of PTS—reexperiencing, avoidance, and hyperarousal—rather than depression or functioning. Other techniques not featured in the PTS workshop (e.g., behavioral activation, pleasant-event scheduling) may be better for reducing depression and isolation, and still other methods may be helpful for improving educational functioning (time management, tutoring).

The observed variability in outcomes may be related to initial levels of PTS symptoms. Initial PCL-M scores ranged from a low of 30 to a high of 68. The two participants (P3, P11) with the highest initial PCL scores and the one participant with the lowest score (P6) showed very little improvement with the intervention. It is possible that the AD PTS workshop is especially well-suited for service members and veterans with moderate symptoms of PTS. Although additional research is needed to test this hypothesis, qualitative feedback from this study suggests that highly distressed and minimally distressed participants were less engaged with the workshop exercises.

A secondary goal of this study was to obtain participant feedback on the workshop sessions. Consistent with randomized con-

Table 3  
*Exit Interview: Summary of Qualitative Feedback*

Participant	Most helpful tool	Recommendation	Study coordinator comments
1	RID tool: Relaxation and breathing.	Increase the number of videos and stories	Quite distressed. Moderate engagement. Some difficulty with reading and writing.
2	Exposure to trauma: Writing exercise	Best for vets who have time, space. Improve ability to retrieve data and access tools	Moderate distress and engagement. Workshops helpful for PTS symptoms (but not for relationships)
3	Confronting triggers	Do exercises with other Vets in group	Highly distressed. Withdrawn. Minimal engagement
4	RID tool: Identify and decide	Prefer talking to writing. Prefer contact with other Vets	Moderate distress. Good candidate. Enjoyed exercises
5	Exposure to trauma: Writing exercise	Include others in exercises (Vets or partners)	Moderate distress. Ideal candidate for workshop. liked exercises and writing. Engaged
6	RID tool: Relaxation and breathing	Use chat room feature; social media to connect with other vets	Not very distressed. Not very engaged.
7	RID: Identify and decide	Need more information on how to do writing exercise. Do exercises in group with other vets	Highly distressed. Lots of struggles with anger and outburst. Impatient. Moderate engagement
8	RID: Relaxation and breathing	Make workshops shorter; Make stories easier to believe (too scripted).	Mildly distressed and minimally engaged.
9	Exposure to trauma: Writing exercise	Workshops should be part of postdeployment process (mandated). Keep writing focused on specific experiences.	Moderately distressed, highly engaged. Enjoyed structure of exercises.
10	Exposure to trauma: Writing exercise	Shorten workshops. Use only one writing exercise.	Moderately distressed, reluctant to complete questionnaires.
11	RID: Relaxation and breathing	Guidance for how to work with incomplete memories. Writing exercise almost impossible.	Highly distressed (almost discontinued participation). Better candidate for face-to-face treatment.



trolled trials (RCT) studies of computerized CBT for anxiety and depression (Andrews et al., 2010), adherence/completion of our online sessions was good, with no drop-outs. Research has consistently found, however, that web-based self-help materials are rarely completed without social support (Cavanagh, 2010). In research studies, instrumental, social, and financial support is often provided by a study coordinator. In the current study, participants recommended peer support, whereas other studies have recommended clinicians, coaches, or care managers (Johnston, Titov, Andrews, Spence, & Dear, 2011). Participants in the current study reported being “quite” satisfied with the PTS workshop, and were almost unanimous in recommending the PTS workshops to other veterans with PTS issues.

Finally, qualitative feedback obtained from our exit interviews yielded recommendations for workshop improvements, and provided some consensus on what was most useful. Of note, the various applications of the RID tool were perceived by many participants as especially helpful. Participants indicated that the RID tool was easy to remember and appreciated the importance of being relaxed for clear thinking about the situation and subsequent decisions. The narrative writing exercises were also popular with several participants who reported benefit from understanding their experience from start to finish, rather than recalling scattered fragments. Of course, our student veteran population may be particularly comfortable with writing as a regular part of their school lives. For service members or veterans who do not have that familiarity with writing, this technique may require guidance. The RID tool, on the other hand, is easy to learn and practice. We found it interesting that a common recommendation expressed during interviews was to implement the workshop sessions in group settings with other veterans rather than as solitary activities. A number of participants suggested doing online workshop exercises with other veterans, or otherwise using the workshop technology to connect with their peers. These preferences already have been reflected in clinical practice. The use of this and other After Deployment.org online workshops as components of group therapies is becoming widespread. Veterans increasingly are being prescribed AfterDeployment.org online workshops for homework between clinic visits or for group discussion.

Our preliminary findings appear to show that the AfterDeployment.org online PTS workshop can be effective in reducing PTS symptoms in some cases, but also suggest that additional research is needed. A larger RCT study comparing the PST workshops to a waitlist group and/or a face-to-face treatment group may provide important efficacy data. A dismantling study may help to isolate the unique and incremental impact of each PTS session, and manipulating type and level of support may also provide helpful clinical findings. Data are currently being collected in another VA case series of OEF/OIF veterans completing the PTS workshops with 10-min supportive coaching (B. Belcher, personal communication, May 24, 2012). With increasing numbers of service members and veterans using the Internet (Bush, Fullerton, Crumpton, Metzger-Abamukong, & Fantelli, 2012), and 74% of Internet users with PTSD symptoms willing to try an Internet-based intervention (Spence et al., 2011), the time seems right to further examine the clinical utility of the AfterDeployment.org PTS workshops.

## Limitations

Although our findings are noteworthy, there are natural limitations of interpretation and scalability inherent in our design. Unlike traditional multiple-baseline designs, the nonconcurrent multiple-baseline design we employed provides less control over nuisance variables due the unstaggered introduction of the intervention. Consequently, this design may be more susceptible to threats to internal validity, such as history, maturation, and regression toward the mean. Due to the lack of stable baselines for some participants, we must also be guarded in our inferences regarding the effectiveness of our treatment for these participants. Furthermore, although within-subject quantitative analyses allow us to describe changes over time for each individual, they also inhibit us from extrapolating those findings too strongly to a broader population. With a sample of 11 of 256 veterans attending SJSU at the time of the study, we cannot be sure how representative our study participants were and we must exercise caution when describing the overall effectiveness of our intervention.

## Conclusion

Approximately one third of Internet users with PTSD symptoms prefer Internet-based interventions over face-to-face care (Spence et al., 2011). However, most computerized CBT programs are not yet available to the public or to clinicians. In contrast, our online workshop shares similar methodologies and content with other promising or successful trials of Internet-based treatment for PTSD (e.g., Litz, Engel, Bryant, & Papa, 2007), are now available to service members and veterans and offer an immediately available resource for these individuals. The AfterDeployment.org PTS workshop already has been adopted for clinical use in a variety of care settings across the country as an accessory to therapy. The current pilot test, at the minimum, confirms the potential of such easily accessible and confidential Internet-based tools for addressing behavioral-health issues.

## References

- Andersson, G., Bergstrom, J., Hollandare, F., Carlbring, P., Kalso, V., & Ekselius, L. (2005). Internet-based self-help for depression: Randomised controlled trial. *British Journal of Psychiatry*, 187, 456–461.
- Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PLoS One*, 5(10), e13196. doi:10.1371/journal.pone.0013196
- Bliese, P. D., Wright, K. M., Adler, A. B., Cabrera, O., Castro, C. A., & Hoge, C. W. (2008). Validating the primary care posttraumatic stress disorder screen and the posttraumatic stress disorder checklist with soldiers returning from combat. *Journal of Consulting and Clinical Psychology*, 76, 272–281. doi:10.1037/0022-006X.76.2.272
- Bulté, I., & Onghena, P. (2009). Randomization tests for multiple-baseline designs: An extension of the SCRT-R package. *Behavior Research Methods*, 41, 477–485. doi:10.3758/BRM.41.2.477
- Bush, N. E., Bosmajian, C. P., Fairall, J. M., McCann, R. A., & Ciulla, R. P. (2011). Afterdeployment.org: A web-based multimedia wellness resource for the postdeployment military community. *Professional Psychology: Research and Practice*, 42, 455–462. doi:10.1037/a0025038
- Bush, N. E., Fullerton, N., Crumpton, R., Metzger-Abamukong, M., & Fantelli, E. (2012). Soldiers' personal technologies on deployment and at home. *Telemedicine and eHealth*, 18, 253–263. doi:10.1089/tmj.2011.0131

- Buzza, C., Ono, S. S., Turvey, C., Wittrock, S., Noble, M., Reddy, G., . . . Schacht Reisinger, H. (2011). Distance is relative: Unpacking a principal barrier in rural healthcare. *Journal of General Internal Medicine*, 26 Supplement, 2, 648–654. doi:10.1007/s11606-011-1762-1
- Cavanagh, K. (2010). Turn on, tune in and (don't) drop out: Engagement, adherence, attrition, and alliance with Internet-based interventions. In J. Bennett-Levy, D. A. Richards, P. Farrand, H. Christensen, K. M. Griffiths, D. J. Kavanaugh & C. Williams (Eds.), *Oxford guide to low intensity CBT interventions* (pp. 227–233). New York, NY: Oxford University Press.
- Christensen, H., Griffiths, K. M., & Jorm, A. F. (2004). Delivering interventions for depression by using the Internet: Randomised controlled trial. *BMJ: British Medical Journal*, 328, 265–269. doi:10.1136/bmj.37945.566632.EE
- Ferron, J., & Scott, H. (2005). Multiple baseline designs. In B. S. Everett & D. C. Howells (Eds.), *Encyclopedia of statistics in behavioral science* (Vol. 3, pp. 1306–1309). New York, NY: Wiley. doi:10.1002/0470013192.bsa419
- Frueh, B. C., Monnier, J., Yim, E., Grubaugh, A. L., Hamner, M. B., & Knapp, R. G. (2007). A randomized trial of telepsychiatry for post-traumatic stress disorder. *Journal of Telemedicine and Telecare*, 13, 142–147. doi:10.1258/135763307780677604
- Germain, V., Marchand, A., Bouchard, S., Guay, S., & Drouin, M. S. (2010). Assessment of the therapeutic alliance in face-to-face or video-conference treatment for posttraumatic stress disorder. *CyberPsychology and Behavior*, 13, 29–35. doi:10.1089/cyber.2009.0139
- Greene-Shortridge, T. M., Britt, T. W., & Castro, C. A. (2007). The stigma of mental health problems in the military. *Military Medicine*, 172, 157–161. doi:10.1089/cpb.2007.0249
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44, 1–25. doi:10.1016/j.brat.2005.06.006
- Holowka, D. W., & Marx, B. P. (in press). Assessing functioning and quality of life after trauma exposure. In G. Beck & D. M. Sloan. (Eds.), *The Oxford handbook of traumatic stress disorders*. New York, NY: Oxford University Press.
- Huitema, B. E. (2011). *The analysis of covariance and alternatives: Statistical methods for experiments, quasi-experiments, and single-case studies* (2nd ed.). Hoboken, NJ: John Wiley & Sons. doi:10.1002/9781118067475
- Huitema, B. E., & McKean, J. W. (2000). A simple and powerful test for autocorrelated errors in OLS intervention models. *Psychological Reports*, 87, 3–20. doi:10.2466/pr0.2000.87.1.3
- Huitema, B. E., McKean, J. W., & Laraway, S. (2008). Time-series intervention analysis using ITSACORR: Fatal flaws. *Journal of Modern Applied Statistical Methods*, 6, 367–379.
- Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K., . . . Prince, S. E. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology*, 64, 295–304. doi:10.1037/0022-006X.64.2.295
- Jacobson, N. S., Follette, W. C., & Revenstorf, D. (1984). Psychotherapy outcome research: Methods for reporting variability and evaluating clinical significance. *Behavior Therapy*, 15, 336–352. doi:10.1016/S0005-7894(84)80002-7
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59, 12–19. doi:10.1037/0022-006X.59.1.12
- Johnston, L., Titov, N., Andrews, G., Spence, J., & Dear, B. F. (2011). A RCT of a transdiagnostic Internet-delivered treatment for three anxiety disorders: Examination of support roles and disorder-specific outcomes. *PLoS One*, 6, e28079. doi:10.1371/journal.pone.0028079PONE-D-11-04313
- Kim, P. Y., Thomas, J. L., Wilk, J. E., Castro, C. A., & Hoge, C. W. (2010). Stigma, barriers to care, and use of mental health services among active duty and National Guard soldiers after combat. *Psychiatric Services*, 61, 582–588. doi:10.1176/appi.ps.61.6.582
- Kroenke, K., & Spitzer, R. L. (2002). The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals*, 32, 509–515.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16, 606–613. doi:10.1046/j.1525-1497.2001.016009606.x
- Litz, B. T., Engel, C. C., Bryant, R. A., & Papa, A. (2007). A randomized, controlled proof-of-concept trial of an Internet-based, therapist-assisted self-management treatment for posttraumatic stress disorder. *The American Journal of Psychiatry*, 164, 1676–1684. doi:10.1176/appi.ajp.2007.06122057
- Maassen, G. H. (2004). The standard error in the Jacobson and Truax Reliable Change Index: The classical approach to the assessment of reliable change. *Journal of the International Neuropsychological Society*, 10, 888–893. doi:10.1017/S1355617704106097
- McDonald, S. D., & Calhoun, P. S. (2010). The diagnostic accuracy of the PTSD Checklist: A critical review. *Clinical Psychology Review*, 30, 976–987. doi:10.1016/j.cpr.2010.06.012
- McKnight, S. D., McKean, J. W., & Huitema, B. E. (2000). A double bootstrap method to analyze linear models with autoregressive error terms. *Psychological Methods*, 5, 87–101. doi:10.1037/1082-989X.5.1.87
- McLean, C. P., Steenkamp, M. M., Levy, H. C., & Litz, B. T. (2009). Posttraumatic stress disorder. In M. A. Cuccare & K. R. Weingardt (Eds.), *Using Technology to Support Evidence-Based Behavioral Health Practice: A Clinician's Guide* (pp. 45–68). New York, NY: Routledge.
- McQuaid, J. R., Marx, B. P., Rosen, M. I., Bufka, L. F., Tenhula, W., & Cook, H. (in press). Mental health assessment in rehabilitation research. *Journal of Rehabilitation Research and Development*.
- Meichenbaum, D. H., & Deffenbacher, J. L. (1988). Stress Inoculation Training. *The Counseling Psychologist*, 16, 69–90. doi:10.1177/0011000088161005
- Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *JAMA: Journal of the American Medical Association*, 298, 2141–2148. doi:10.1001/jama.298.18.2141
- Morland, L. A., Pierce, K., & Wong, M. Y. (2004). Telemedicine and coping skills groups for Pacific Island veterans with post-traumatic stress disorder: A pilot study. *Journal of Telemedicine and Telecare*, 10, 286–289. doi:10.1258/1357633042026387
- Perdices, M., & Tate, R. L. (2009). Single-subject designs as a tool for evidence-based clinical practice: Are they unrecognized and undervalued? *Neuropsychological Rehabilitation*, 19, 904–927. doi:10.1080/09602010903040691
- Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Rivers, A. J., Johnson, D. C., & Southwick, S. M. (2010). Risk and protective factors associated with suicidal ideation in veterans of Operations Enduring Freedom and Iraqi Freedom. *Journal of Affective Disorders*, 123, 102–107. doi:10.1016/j.jad.2009.08.001
- Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., & Southwick, S. M. (2009). Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans. *Psychiatric Services*, 60, 1118–1122. doi:10.1176/appi.ps.60.8.1118
- Reger, G. M., Holloway, K. M., Candy, C., Rothbaum, B. O., Difede, J., & Rizzo, A. A. (2011). Effectiveness of virtual reality exposure therapy for active duty soldiers in a military mental health clinic. *Journal of Traumatic Stress*, 24, 93–96. doi:10.1002/jts.20574

- Rodriguez, P., Holowka, D. W., & Marx, B. P. (in press). Assessing functional impairment related to posttraumatic stress disorder. *Journal of Rehabilitation Research and Development*.
- Ruzek, J. I., Hoffman, J., Ciulla, R., Prins, A., Kunz, E., & Gahm, G. (2011). Bringing Internet-based education and intervention into mental health practice: Afterdeployment.org. *European Journal of Psychotraumatology*, 2, 7278–7286. doi:10.3402/ejpt.v2i0.7278
- Seal, K. H., Metzler, T. J., Gima, K. S., Bertenthal, D., Mague, S., & Marmar, C. R. (2009). Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002–2008. *American Journal of Public Health*, 99, 1651–1658. doi:10.2105/AJPH.2008.150284
- Spence, J., Titov, N., Solley, K., Dear, B. F., Johnston, L., Wootton, B., . . . Choi, I. (2011). Characteristics and treatment preferences of people with symptoms of posttraumatic stress disorder: An Internet survey. *PLoS One*, 6, e21864. doi:10.1371/journal.pone.0021864
- Thomas, J. L., Wilk, J. E., Riviere, L. A., McGurk, D., Castro, C. A., & Hoge, C. W. (2010). Prevalence of mental health problems and functional impairment among active component and National Guard soldiers 3 and 12 months following combat in Iraq. *Archives of General Psychiatry*, 67, 614–623. doi:10.1001/archgenpsychiatry.2010.54
- Tsai, J., Pietrzak, R. H., Southwick, S. M., & Harpaz-Rotem, I. (2011). Examining the dimensionality of combat-related posttraumatic stress and depressive symptoms in treatment-seeking OEF/OIF/OND veterans. *Journal of Affective Disorders*, 135, 310–314. doi:10.1016/j.jad.2011.06.057
- United States Department of Defense. (2012). *National Center for Telehealth & Technology* [Website]. Retrieved from <http://t2health.org/>
- Vasterling, J. J., Proctor, S. P., Friedman, M. J., Hoge, C. W., Heeren, T., King, L. A., & King, D. W. (2010). PTSD symptom increases in Iraq-deployed soldiers: Comparison with nondeployed soldiers and associations with baseline symptoms, deployment experiences, and post-deployment stress. *Journal of Traumatic Stress*, 23, 41–51. doi:10.1002/jts.20487
- Watson, P. J., & Workman, E. A. (1981). The non-concurrent multiple baseline across-individuals design: An extension of the traditional multiple baseline design. *Journal of Behavior Therapy and Experimental Psychiatry*, 12, 257–259. doi:10.1016/0005-7916(81)90055-0
- Weathers, F. (2008). Posttraumatic stress disorder checklist. In G. Reyes, J. D. Elhai, & J. Ford (Eds.), *Encyclopedia of psychological trauma* (pp. 491–494). Hoboken, NJ: Wiley.
- Weathers, F., & Ford, J. (1996). Psychometric review of PTSD checklist (PCL-C, PCL-S, PCL-M, PCL-PR). In B. Stamm (Ed.), *Measurement of stress, trauma and adaptation* (pp. 250–251). Lutherville, MD: Sidran Press.
- Wilkins, K. C., Lang, A. J., & Norman, S. B. (2011). Synthesis of the psychometric properties of the PTSD checklist (PCL) military, civilian, and specific versions. *Depression and Anxiety*, 28, 596–606. doi:10.1002/da.20837

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